

Microwave Temperature Profiler (MTP)

Temperature Intercomparisons

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CAMEX-4 Science Workshop

Huntsville, AL

November 20-22, 2002

What Temperature Measurements Were Available?

• Aircraft *In Situ* Temperature Measurements

- DC-8
 - Information Collection and Transmission System (ICATS)
 - Meteorological Measurement System (MMS)
- ER-2
 - Navigation Data Recorder (NDR)

• Aircraft Temperature Profile Measurements

- DC-8
 - Dropsondes
 - Microwave Temperature Profiler (MTP)
- ER-2
 - Dropsondes
 - Microwave Temperature Profiler (MTP)

• Other Temperature Profile Measurements

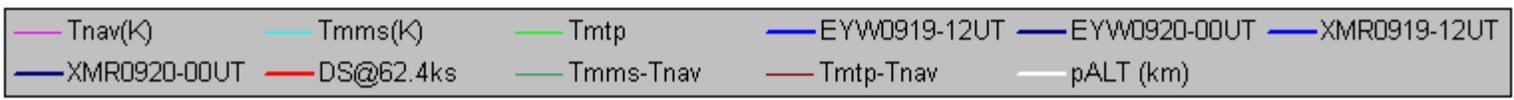
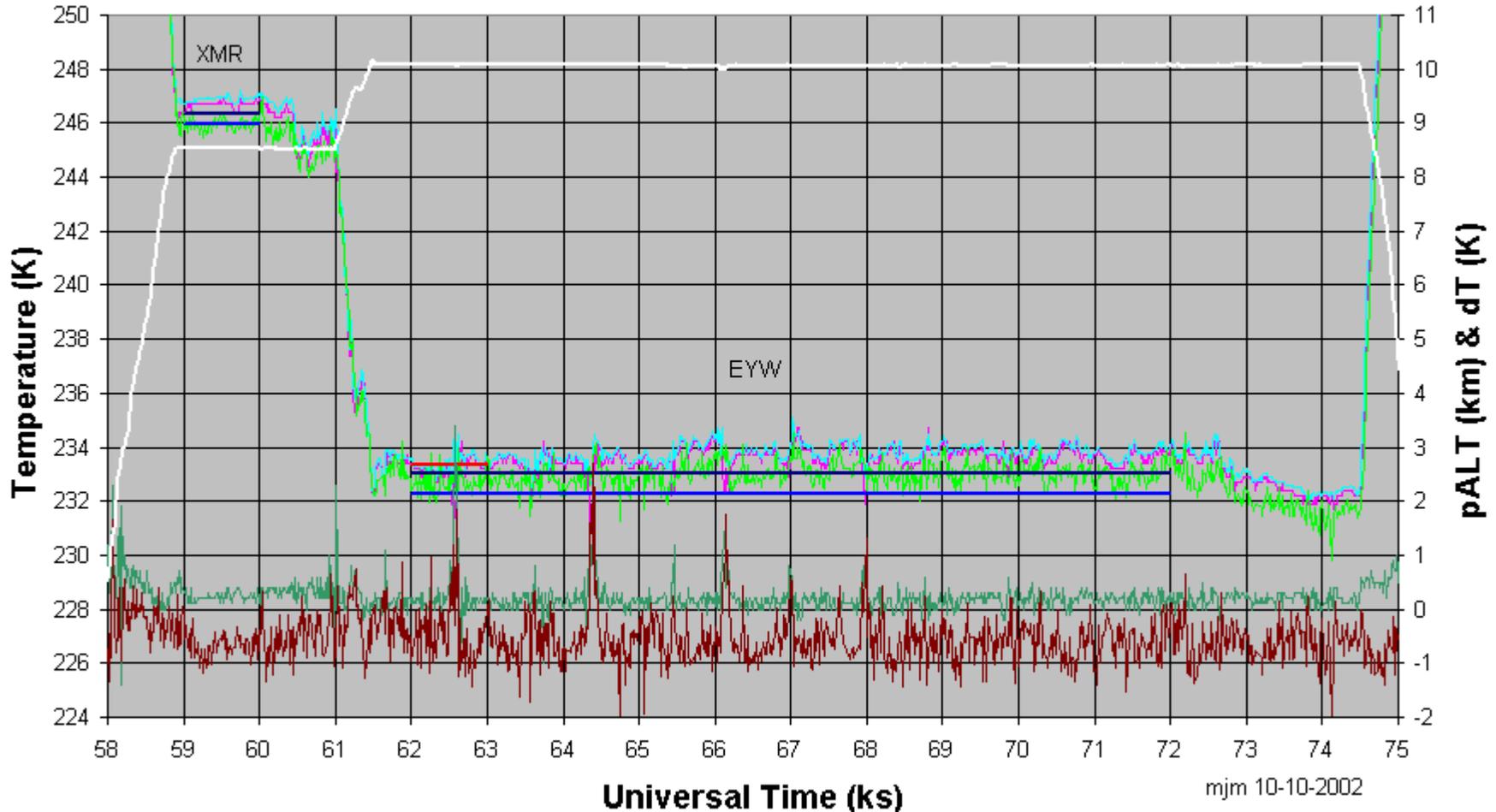
- Andros Island Radiosondes
- National Weather Service (NWS) Radiosondes

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A Comparison of MTP, MMS, ICATS, & Dropsondes

MTP

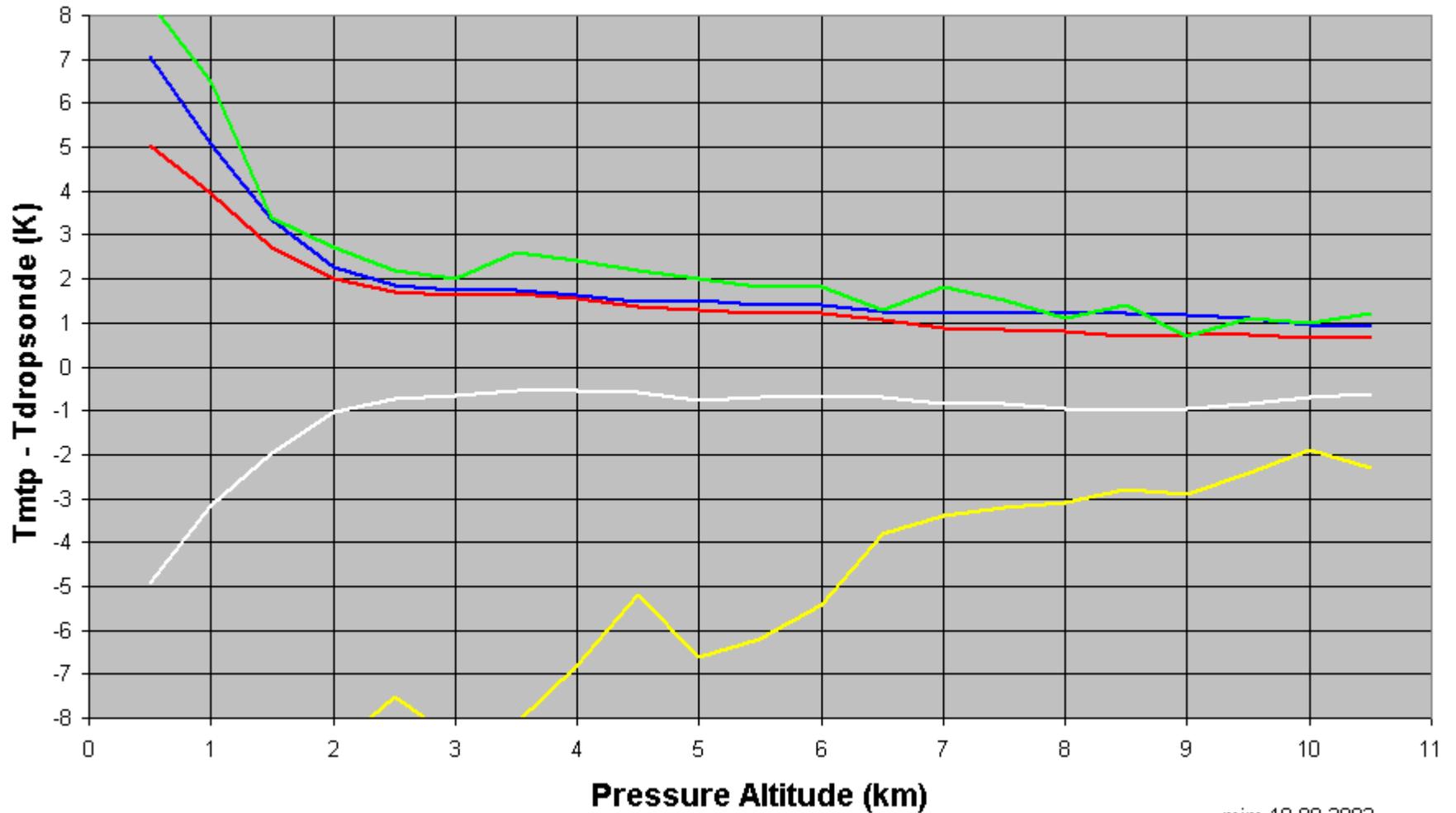
Temperatures at Flight Level for CAMEX-4 DC-8 Flight on 2001.09.19



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Comparison of Tmtp-Tdropsonde for 93 DC-8 Launches

MTP



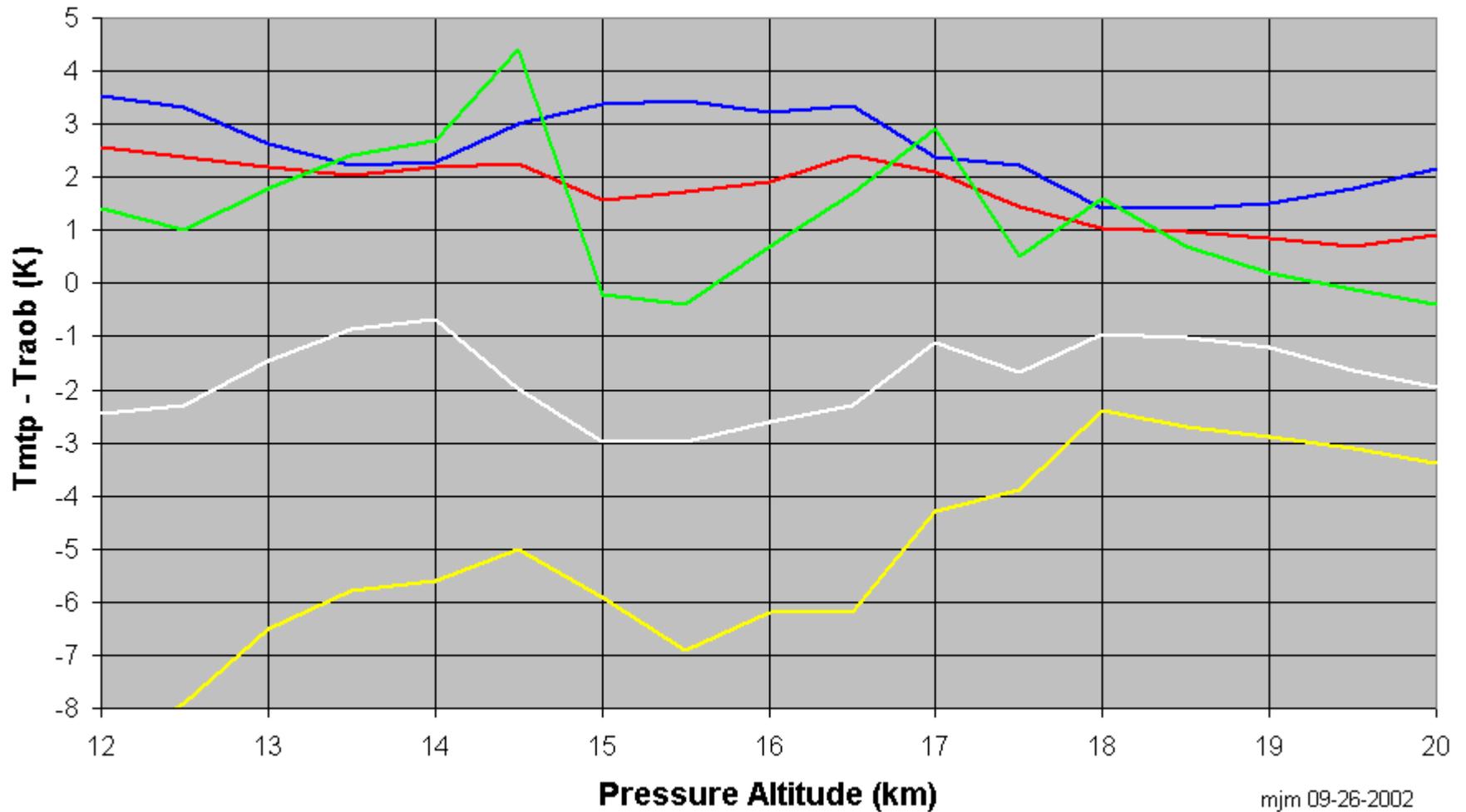
mjm 10-08-2002

— Average — Std Dev — Total Diff — Min Diff — Max Diff

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Comparison of Tmtp - Tdropsonde for 25 ER-2 Launches

MTP



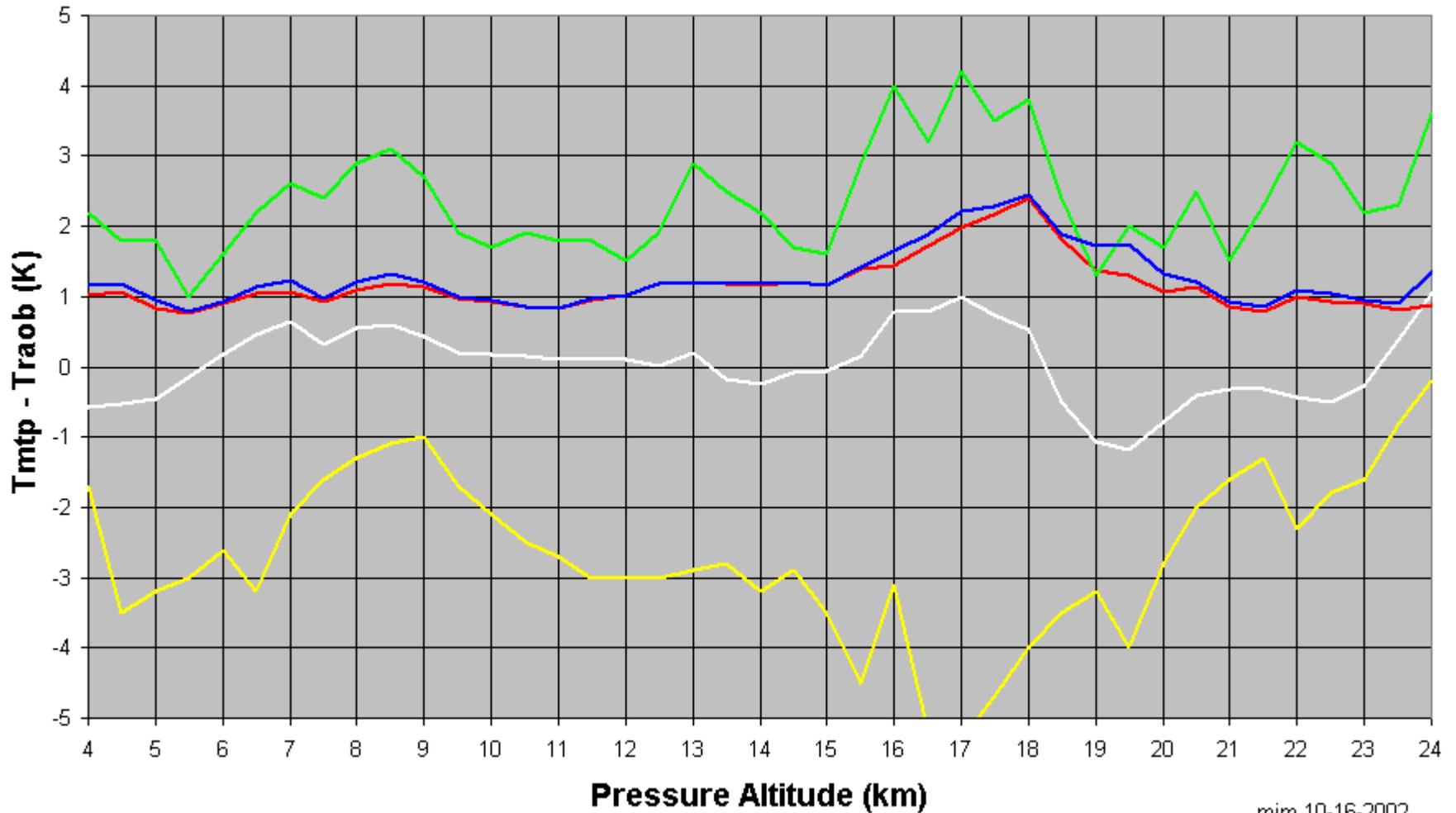
— Average — Std Dev — Total Diff — Min Diff — Max Diff

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Comparison of Tmtp - Traob for 27 DC-8 Overpasses

MTP



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— Average — Std Dev — Maximum Diff — Minimum Diff — Total Error

Summary

- **DC-8: When compared to NWS radiosondes**
 - the ICATS temperatures were 0.73 K too warm,
 - the MMS temperatures were 0.91 K too warm, and
 - the Dropsonde temperatures were 0.4 K to 1.0 K too warm, depending on altitude
- **ER-2: When compared to NWS radiosondes**
 - the NDR temperatures were 1.51 K too warm, and
 - the Dropsonde temperatures were 1.0 K to 2.0 K too warm, depending on altitude
- **Since the MTP gain is calibrated so that the temperature profiles agree with NWS radiosondes, there is no average bias between the MTP temperature profiles and the NWS radiosondes.**
- **URL:**
http://mtp.jpl.nasa.gov/missions/camex4/Science/CAMEX4_Temperature_Comparisons.html